

Null Island - a node of contention in OpenStreetMap

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Outline of our presentation

- Null Island as a socio-technological concept only sparsely engaged with within the GIScience/Geocomputation communities
- Null Island - an abstract concept of a fictional place found in real databases – a place to put erroneous data
- Implications and perspectives for mapping "real fictional places" in OSM - and perhaps a catalyst for wider debates of OSM mapping practices.

A node, a single concept for a real and “not so real” thing

en.wikipedia.org/wiki/en:Null%20Island?uselang=en-GB

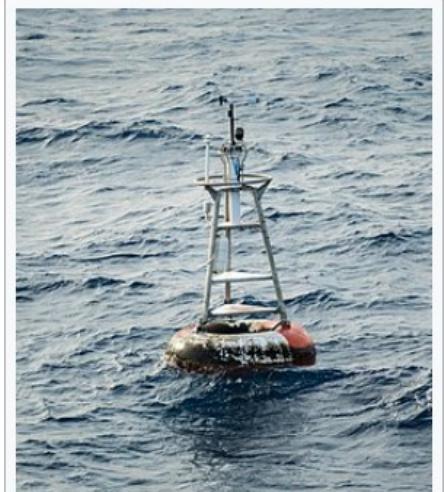
Null Island

From Wikipedia, the free encyclopedia

Coordinates: 0°N 0°E

Null Island is the point on the Earth's surface at zero degrees [latitude](#) and zero degrees [longitude](#) (0°N 0°E), i.e., where the [prime meridian](#) and the [equator](#) intersect. Null Island is located in [international waters](#) in the Atlantic Ocean, roughly 600 km off the coast of West Africa, in the [Gulf of Guinea](#).^[1] The exact point, using the [WGS84](#) datum, is marked by the Soul buoy (named after the [musical genre](#)), a permanently-moored [weather buoy](#).

The term "Null Island" jokingly refers to the suppositional existence of an island at that location, and to a common cartographic placeholder name to which coordinates erroneously set to 0,0 are assigned in placename databases in order to more easily find and fix them. The nearest land (4°45'30"N 1°58'33"W) is 570 km (354 mi; 307.8 nmi) to the north – a small [Ghanaian](#) islet offshore from Achowa Point^[2] between Akwidaa and Dixcove. The depth of the seabed beneath the



The weather buoy moored at the coordinates of Null Island, in the Gulf of Guinea at 0°N 0°E



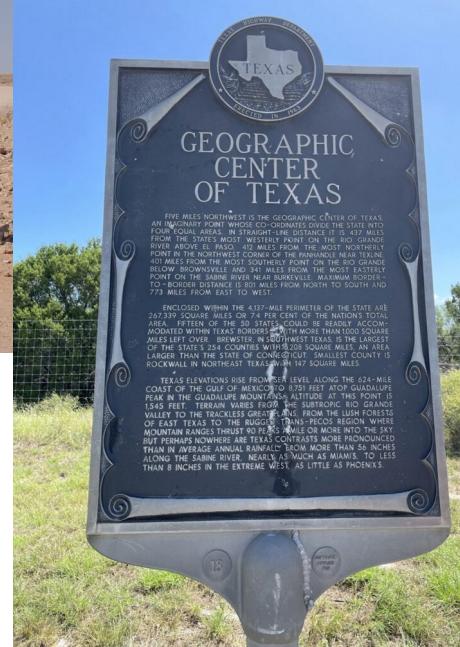
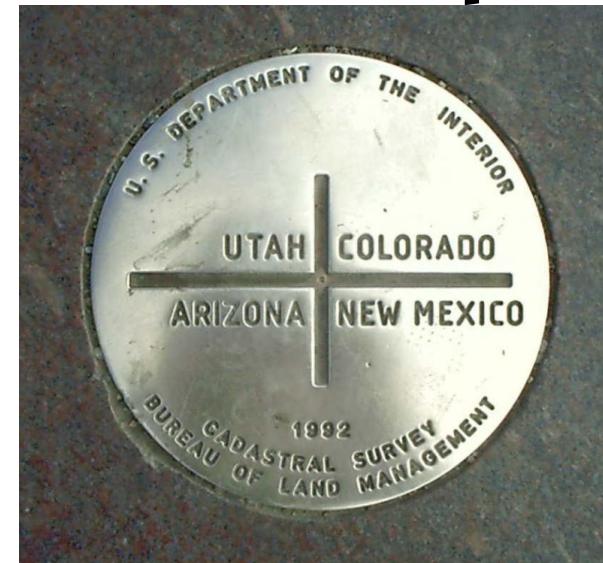
Coordinates for Null Island were added to the [Natural Earth](#) public dataset in 2012. The term came into wide use (although there is evidence of it being used in fiction before) given a geography, history, and flag.^[1] Natural Earth has a scale rank 100, indicating it should never be shown in mapping".^[4] In data science, null values (indicating an absence of data) are often coerced to a "nans allowed" context.^[5] Such errors arise, for example, where an image artifact is

0° 0° MOSTLY MAPS

WELCOME TO THE REPUBLIC OF NULL ISLAND



Extreme points, geographic oddities



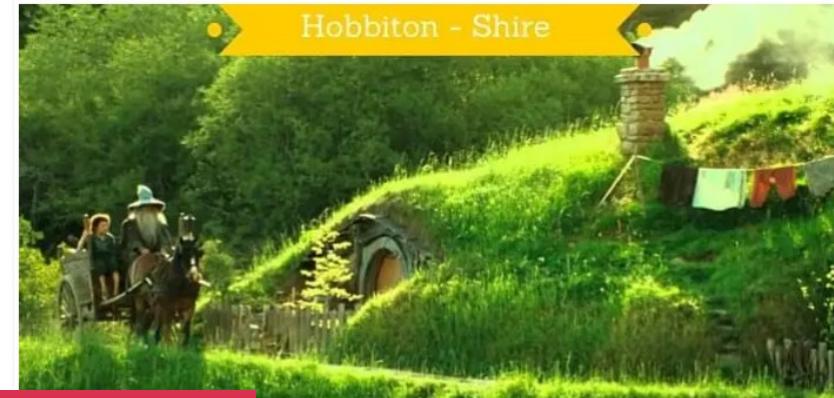
Fictional places, embedded in reality



13 The Kingsroad From 'Game Of Thrones' – Bregagh Road, Northern Ireland



10. Hobbiton – the Shire Village VS Matamata in New Zealand



Worldwide database of
detailed film, scene and
travel information



Matamata New Zealand

A placeholder for ‘bad’
geolocation, missing or
uncertain geographies

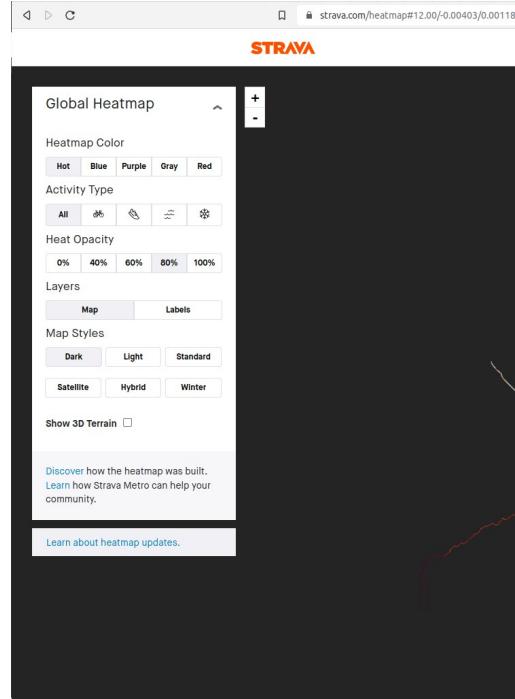
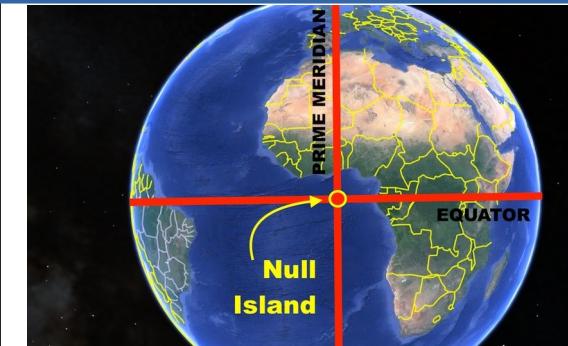
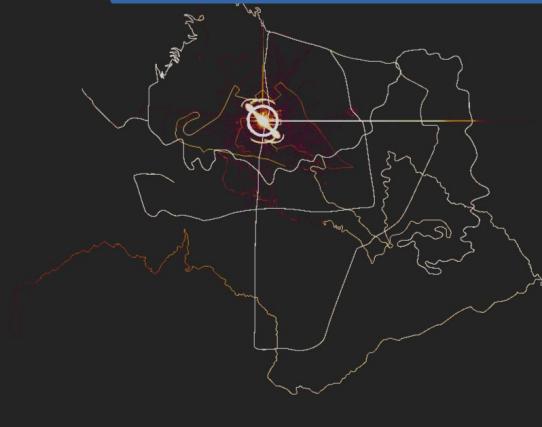


TABLE 1. Examples of explicitly converting data (type conversion) to floating point numbers in JavaScript with the `parseFloat()` and `Number()` built-in functions

Input value	Converted value parseFloat (<i>Input</i>)	Number (<i>Input</i>)
'0'	0.0	0.0
"	NaN	0.0
'0asd'	0.0	NaN



<https://www.strava.com/heatmap#12.00/-0.00001/0.00001/hot/all>

'outside databases, Null Island does not exist' (Parker, 2020)

M. Parker, *Humble Pi: When Math Goes Wrong in the Real World*. Penguin, 2020, ISBN: 978-0-593-08468-7.

Recent publication - our more general overview of Null Island

The screenshot shows the arXiv preprint page for arXiv:2204.08383. The title is "I think I discovered a military base in the middle of the ocean" -- Null Island, the most real of fictional places. The authors are Levente Juhász, Peter Mooney. The abstract discusses Null Island, a fictional place located at 0° latitude and 0° longitude in the WGS84 geographic coordinate system. The paper explores its implications for geospatial data and services. The page includes a sidebar for download options (PDF, Other formats), current browse context (cs.HC), change to browse by (cs, cs.CY, cs.DB), references & citations (NASA ADS, Google Scholar, Semantic Scholar), export BibTeX citation, and bookmarking options.

<https://arxiv.org/abs/2204.08383v2>

The screenshot shows the IEEE Access publication page for the same paper. The title is "I think I discovered a military base in the middle of the ocean" -- Null Island, the most real of fictional places. The authors are LEVENTE JUHÁSZ¹, (Member, IEEE), PETER MOONEY², (Member, IEEE). The abstract discusses Null Island's association with large amounts of geographic data and its implications for both technological and social issues. The article summarizes error sources that lead to data being associated with Null Island. The index terms include error, fictional place, geocoding, geographic information science, geoweb, human-computer interaction, and web mapping. The introduction and motivation section highlights the need for awareness of Null Island's existence and its impact on various fields.

<https://ieeexplore.ieee.org/document/9852234>

though Null Island is 'fictional', its implications concerning geographic information are very real, and as such, Null Island and its associated issues should be discussed, in a serious and sustained manner, within the GIScience community and beyond.

The name Null Island is used to refer to the location on Earth where the equator intersects the prime meridian at 0° latitude and 0° longitude (0, 0) in the Gulf of Guinea off the coast of West Africa (Fig. ①). Although a weather observation buoy part of the Prediction and Research Moored Array in the Tropical Atlantic (PIRATA) program is permanently anchored to the seabed at that location (Fig. ②), Null Island cannot be considered a physical entity (i.e. an island). As Parker puts it: '*outside databases, Null Island does not exist*' ③. It exists only as a placeholder for bad data in databases and digital maps. It is also regularly the topic of social media discussions (e.g. as highlighted in the title of this paper), popular media articles and blogs as well as appearing as

Bloomberg

Newsletter

MapLab: Inside Null Island, 'the Most Real of Fictional Places'



The location of "Null Island" — a place that doesn't exist outside of databases. In a new paper, researchers refer to it as "the most real of fictional places." Credit: Levente Juhász and Peter Mooney

By Marie Patino [+Follow](#)

4 May 2022 at 22:15 GMT+1



Maarten Lambrechts @maartenzam · Apr 26

Replies to [@ramiroaznar](#)

Thanks for sharing, going to enjoy reading this so much!

1



1



Tip



Ramiro Aznar @ramiroaznar · Apr 27

Your welcome! I definitely did. Love their recommendations to avoid the error 😊 "geospatial training for programmers and developers"

...

A screenshot of a news website with a dark header featuring the Zeta logo. Below the header are two buttons: "IL MASTRO" and "OLTRE IL CONFINE". The main content area has a dark background with white text. At the top, it says "Ultimo aggiornamento: Giugno 9 2022". Below that is the title "L'isola che (non) c'è".

Peter Mooney e Levente Juhász hanno studiato come al largo del Golfo della Guinea siano registrate migliaia attività umane. Spoiler alert: non è possibile sia così.

[Leonardo Pini](#)

Dove l'Equatore e il meridiano di Greenwich si intersecano, a 0° E, si trova un'isola piena di strade dove fare jogging e camminare. Questo luogo in aperto Oceano dovuto vedersela con il Covid secondo alcuni utenti di Reddit ospitare una base militare se

Il Post @ilpost

L'isola dell'Atlantico creata dai dati sbagliati

[Translate Tweet](#)

A map of the Atlantic Ocean and surrounding landmasses. A small red dot marks the location of Null Island at the intersection of the Equator and the Prime Meridian, located west of Africa.

ilpost.it

L'isola dell'Atlantico creata dai dati sbagliati - Il Post

"Null Island" in realtà non esiste, ma a ovest dell'Africa c'è un luogo in cui vengono localizzate per errore un sacco di attività umane

1:54 PM · May 6, 2022 · [Tweet il Post](#)

Levente Juhász

@juhaszlevi

My favorite reaction to the Null Island preprint we posted a couple days ago is that it inspired Ernest Davis, a CS prof at [@nyuniversity](#) to write a poem about [#NullIsland](#). I am shocked by all the positive reactions to this little fun project and paper 🙏 cs.nyu.edu/~davise/Verses...

10:51 PM · Apr 29, 2022 · Twitter Web App

Of all the nodes in all of the (OSM) world.....

OpenStreetMap stats

Report run at 2022-08-08 22:00:04 UTC

Number of users	8847884
Number of uploaded GPS points	11887823244
Number of nodes	7846457035
Number of ways	979374002

January 2022 Archives by thread

- Messages sorted by: [subject] [author] [date]
- [More info on this list...](#)

Starting: Sun Jan 2 11:03:12 UTC 2022
Ending: Sun Jan 30 11:26:20 UTC 2022
Messages: 91

- [\[OSM-talk\] weeklyOSM #597 2021-12-21-2021-12-27](#) [weeklyteam](#)
[OSM-talk] Was the deletion of Null Island reasonable? [Emil Linus Albrecht](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Brian M. Sperlongano](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Yuri Astrakhan](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Brian M. Sperlongano](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [john whelan](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Mike Thompson](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Shawn K. Quinn](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Mateusz Konieczny](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Phil Wyatt](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Simon Poole](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Frederik Ramm](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Colin Smale](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Simon Poole](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Michael Collinson](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Sarp Hangisi](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Martin Koppenhoefer](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Volker Schmidt](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Marc_marc](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Michael Kugelmann](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Andy Townsend](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Sarp Hangisi](#)
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 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Andy Townsend](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Sarp Hangisi](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Imre Samu](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Emil Linus Albrecht](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [Martin Koppenhoefer](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
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 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)
 - [\[OSM-talk\] Was the deletion of Null Island reasonable?](#) [stevea](#)

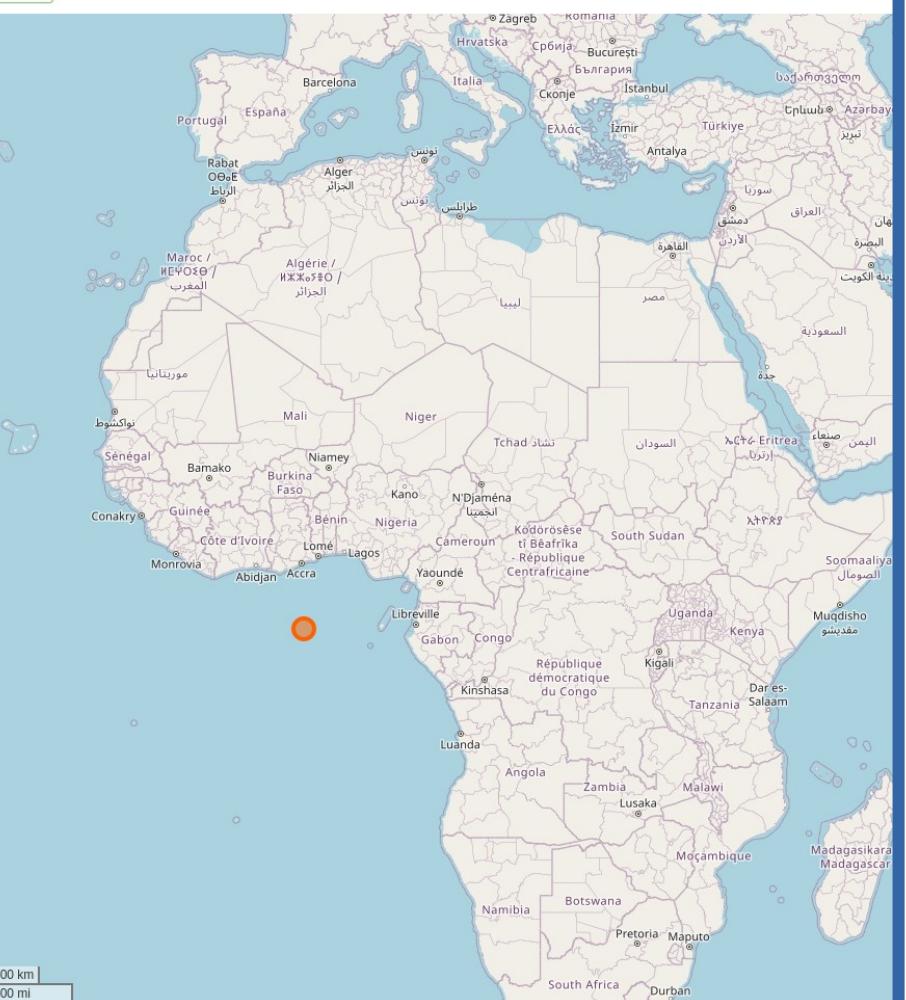
Node: Soul Buoy (3815077900)

Version #125

Reverting some test edits - see https://www.openstreetmap.org/user_blocks/6212

Edited about 1 hour ago by [SomeoneElse_Revert](#)
Changeset #124690476
Location: 0.000000, 0.000000

Tags	
alt_name	Atlas Buoy
description	Located at 0.0. https://en.wikipedia.org/w/index.php?title=Prediction_and_Research_Moored_Array_in_the_Atlantic&oldid=96404080
height	4
image	File:Null_Island_2017.jpg
man_made	monitoring_station
monitoring:water_temperature	yes
monitoring:weather	yes
name	Soul Buoy
note	Do not delete. Visual confirmed by research vessel on May 2009.
operator	Prediction and Research Moored Array in the Atlantic





◀ ▶ C

wiki.openstreetmap.org/wiki/Good_practice#Map_what's_on_the_ground

🔍 | 🚫 🔍

⚙️ 📁 ⌂

If you are a beginner, unsure or editing in a faraway location - feel free to [contact other mappers](#) and ask them to review your edits.

Verifiability

Main article: [Verifiability](#)

OSM data should, as far as is reasonably possible, be verifiable. The principle applies to tags and other aspects of data representation, and essentially means another mapper should be able to come to the same place and collect the same data ("verify" the data you have entered). This principle excludes hypothetical or opinionated data like personal ratings.

Map what's on the ground

Sometimes there's conflicting information about, say, the name of a place. An old map might call it one thing, current maps another, and the place name sign something else. People using our maps (for navigation) won't care about the spelling in other maps, they need to find the names from local signs in the map and vice versa. The only exception to this could be obvious misspellings on signs like *John-F.-Kennwdy Square*. Assuming that people would intuitively look for the correct spelling, perhaps not even noticing the wrongly spelt name at all, it makes sense to correct these. See also: [ground truth](#)

Don't map historic events and historic features

Do not map objects if they do not exist currently, and do not map the location of historic events, because such features cannot be verified. If ruins are left (and thus verifiable), then map the ruins (for example using [historic=ruins](#)). Objects that no longer exist and historic events can be mapped on [OpenHistoricalMap](#) (see [Open Historical Map](#)).

Don't map local legislation if not bound to specific objects

OSM is a geographic database, not a legislative database. Legal aspects such as local traffic rules should only be mapped on specific elements (such as highways) insofar they are dependent on specific geographic features in the real world. For example, do not tag traffic rules on highways that apply by *definition* to all road segments in a country and that can not be overruled by traffic signs that may or not be present in the field, such as the blood alcohol limit for drivers or the legal age to drive a motor vehicle.

However, *absence* of a specific traffic sign or road surface marking can be sufficiently relevant to map. For example, the default legal speed limit can be entered as [maxspeed=*](#) to indicate absence of a different location-specific speed limit. In

Just a node.... but a gateway for other contentious data?

“Lasciate ogni speranza voi ch'entrate”

Dante Alighieri

OpenStreetMap Edit History Export

Search Where is this? Go

Node History: Soul ×
Buoy
(3815077900)
Version #125
Reverting some test edits - see
https://www.openstreetmap.org/user_blocks/6212
Edited 5 days ago by SomeoneElse_Revert
Changeset #124690476
Location: 0.000000, 0.000000

Tags

alt_name	Atlas Buoy
description	Located at 0,0. https://en.wikipedia.org/wiki/Prediction_and_Research_Mored_Array_in_the_Atlantic
height	4
image	File:Null_Island_2017.jpg

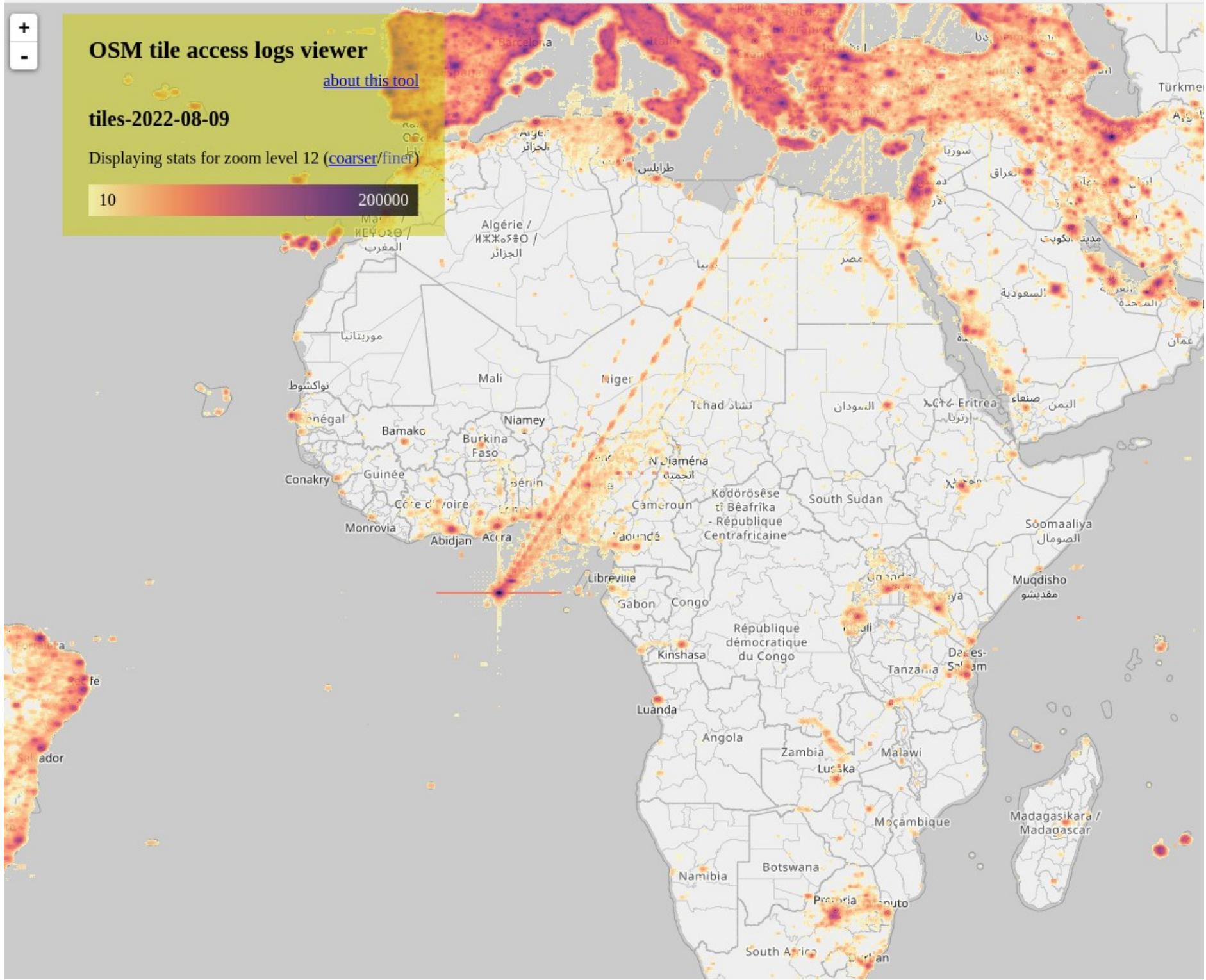


Timezones

Informal borders

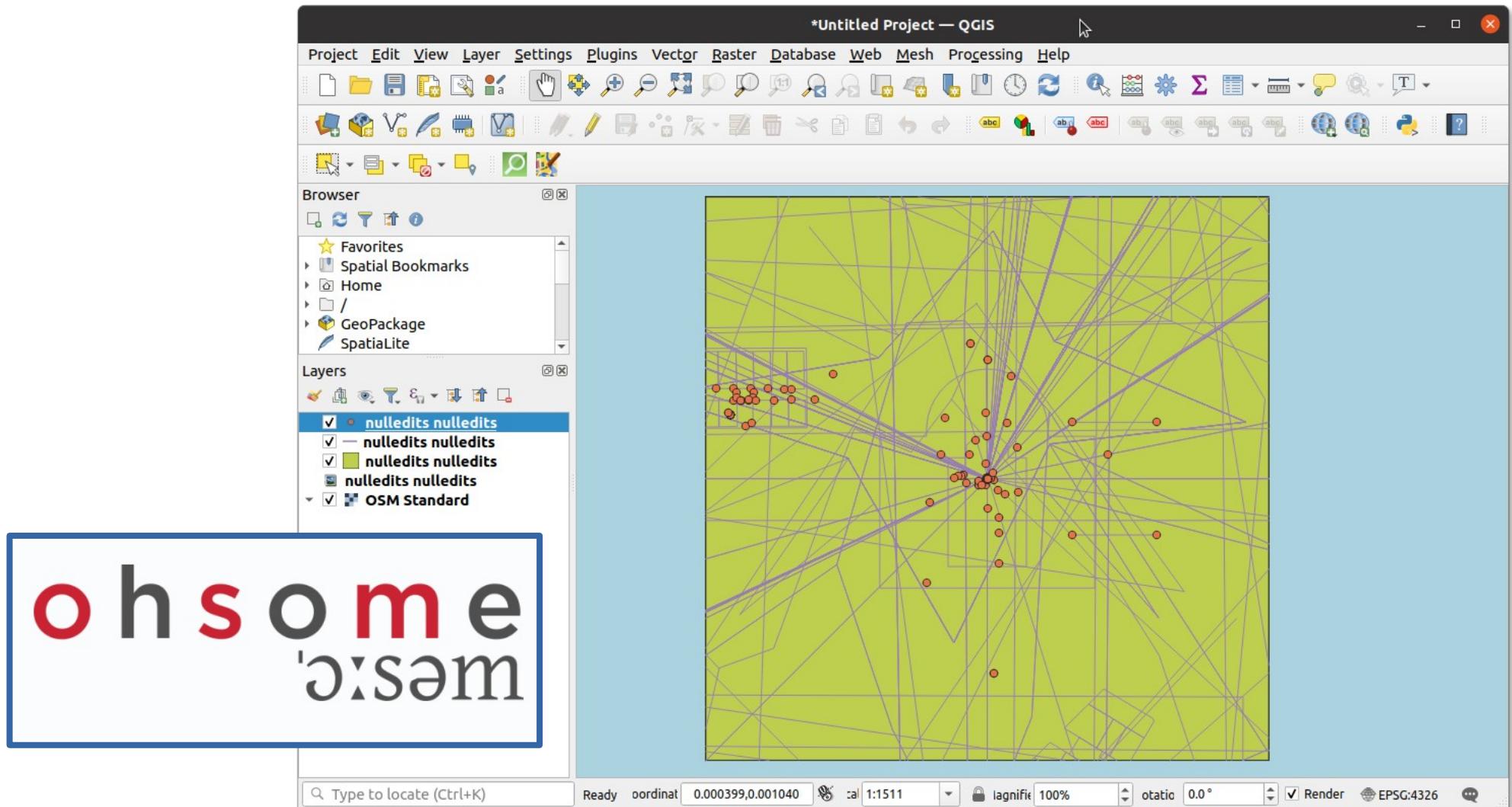
Fictional locations

Moving objects or events (without correct tagging)



History of all Null Island edits 2012 to date in BB

(-0.001, -0.001, 0.001, 0.001)



Some of the happenings on or around “Null Island”

Node History: 5969757384

Version #3

Removing fantasy mapping

Deleted almost 4 years ago by
[SomeoneElse_Revert](#)
Changeset #[63360555](#)

Version #2

Church of Nullology

Edited almost 4 years ago by [St Isidore of Seville](#)
Changeset #[63354417](#)
Location: [0.000000, 0.000000](#)

Tags

amenity	place_of_worship
name	The Incredibly Holy Church of Nullology
religion	None

Node History: 5971419558

Version #5

More "null" garbage

Deleted almost 4 years ago by
[SomeoneElse_Revert](#)
Changeset #[63393445](#)

Version #4

Removing more church of null vandalism

Edited almost 4 years ago by
[SomeoneElse_Revert](#)
Changeset #[63392542](#)
Location: [-0.0000004, -0.0000008](#)

Tags

name	Internet Nation Embassy
name_1	Internet Nation
natural	cliff

Version #3

We have absolutely no idea what is going on and neither do you

Edited almost 4 years ago by [lockout](#)
Changeset #[63390715](#)
Location: [-0.0000020, 0.0000005](#)

Node History: 4505868690

Version #5

Aggiunte

Deleted over 4 years ago by [augustoburzo](#)
Changeset #[57289920](#)

Version #4

Undeleted and moved a library back from "null island" to Italy, where it came from.

Edited over 5 years ago by
[SomeoneElse_Revert](#)
Changeset #[43785042](#)
Location: [40.3905240, 16.5566070](#)

Tags

addr:city	Pisticci
amenity	library
contact:website	http://
name	biblioteca comunale

Node History: 4511970091

Version #5

Remove one object at 0/0 and move another, older one to that place.

Deleted over 5 years ago by [glglgl](#)
Changeset #[44209146](#)

Version #4

Null Island

Edited over 5 years ago by [小智智](#)
Changeset #[43820913](#)
Location: [0.000000, 0.000000](#)

Tags

man_made	monitoring_station
name	Station 13010 - Soul
wikipedia	en:Null Island

Mistakes happen – but are quickly reverted and fixed

Version #10

Fixed node dragged to the equator

Edited about 10 years ago by Neil Penman

Changeset #12116869

Brugge

Tags

bicycle	yes
cycleway	track
highway	residential
maxspeed	30
name	Dries
oneway	no

Nodes

- ▼ 6 nodes
 - ① 144260030 (part of ways — Weidestraat (90037182), — Weidestraat (90034291), and — Leenhof (28986628))
1515025685
1043574574 (part of way — Zandberg (90034475))
323761616 (part of way — Bergjesbos (29399558))
323758740 (part of way 29399551)
144270900 (part of ways — 186369263 and — 14628520)



Version #4

Reverting a very odd Vespucci changeset that moved a small wood from northern California to "null island". There doesn't seem to be anything worth keeping in it.

Edited over 5 years ago by

SomeoneElse_Revert

Changeset #45036953

Tags

Tiger:MTFCC	K2180
leisure	park
name	Babcock Park
source	Tiger2009

Nodes

- ▼ 6 nodes
 - 559932224
 - 559932225
 - 559932229
 - 559932230
 - 559932227
 - 559932224



Loch Ness (amenity=monster)

OpenStreetMap [Edit](#) [History](#) [Export](#)

Search

Where is this? [Go](#)

Node History:
Nessie
(221521876)

Version #6

auto-matching wikidata tags based on wikipedia tags per @talk discussion. Further cleanup will be done using

<https://wiki.openstreetmap.org/wiki/Wikidata%2BC>

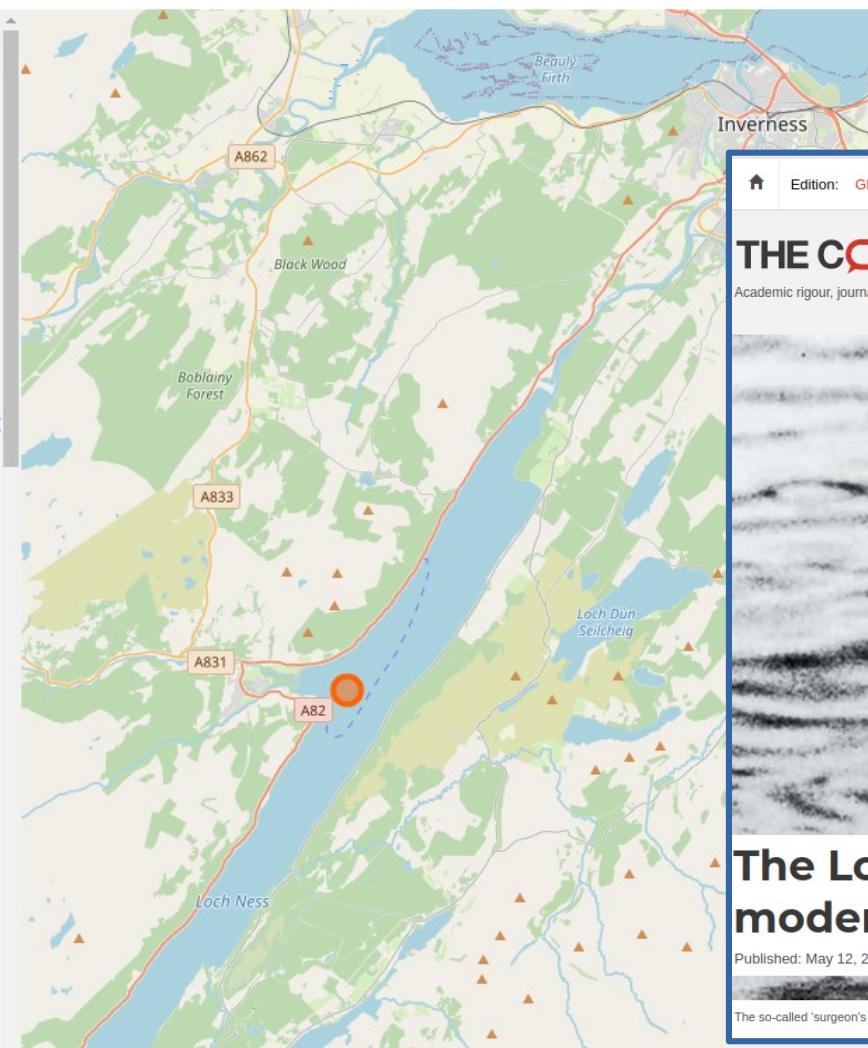
Edited almost 5 years ago by [nyuriks](#)

Changeset #[52344266](#)

Location: [57.3299516, -4.4285252](#)

Tags

amenity	monster
name	Nessie
source	Survey
tourism	attraction
website	http://www.nessie.co.uk/
wikidata	Q49658
wikipedia	en:Loch Ness Monster



The CONVERSATION
Academic rigour, journalistic flair [Search](#)



The Loch Ness monster: a modern history

Published: May 12, 2022 4.12pm BST

The so-called 'surgeon's photograph' taken by gynaecologist Robert Wilson (actually made from a toy submarine) first published in the Daily Mail in 1934. Pic

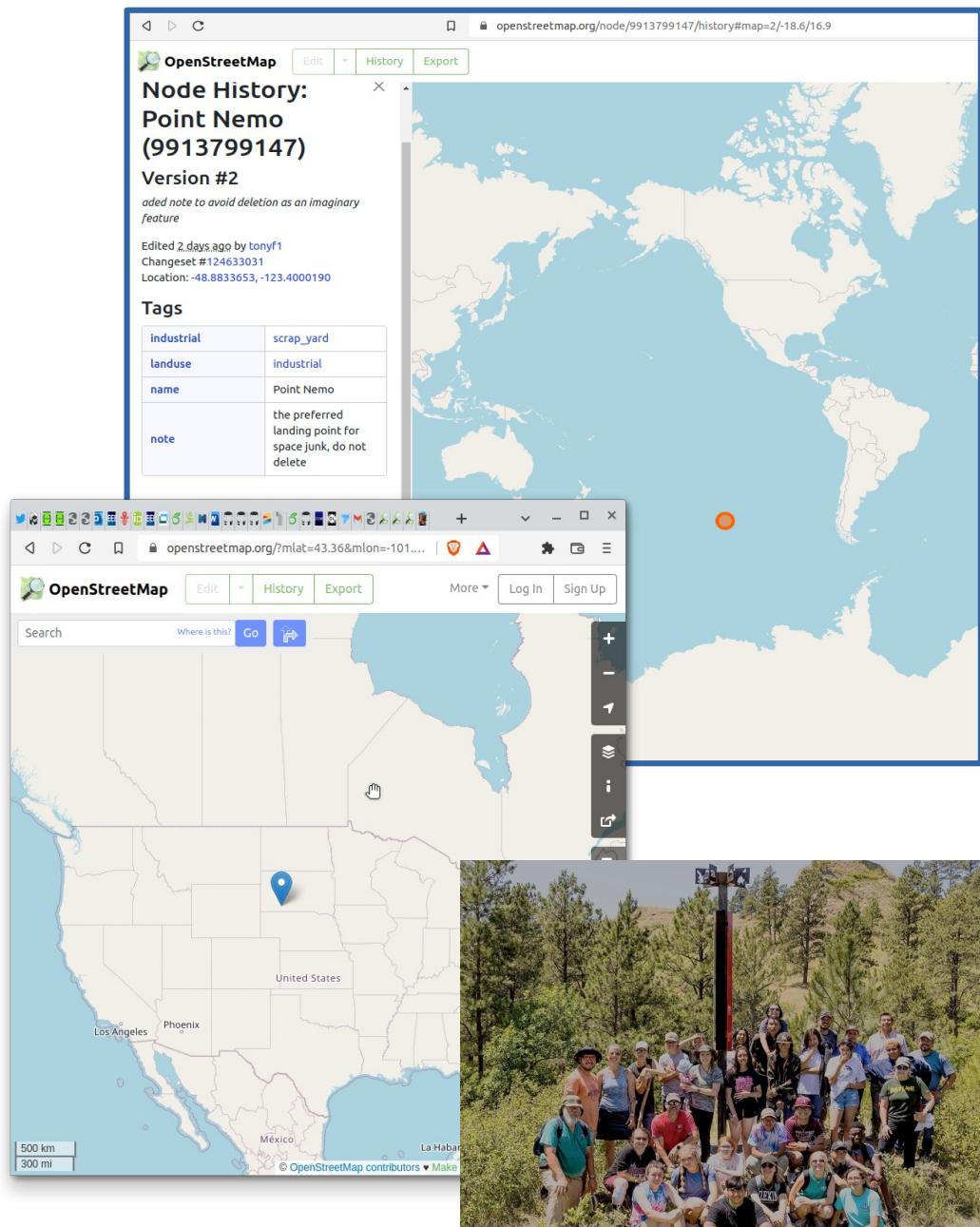
<https://www.openstreetmap.org/node/221521876/history#map=11/57.3325/-4.0491>

Future work(s)

- Quantitative and qualitative study of the impact, perception, debate around mapping of fictional or “non-real” places in OSM.
- Political boundaries, neighbourhoods, geographical oddities, tri-points, quad-points, and so on

<https://tinyurl.com/yr4wddsp>

<https://www.openstreetmap.org/node/9913799147/>



Thank you for watching!

*"At latitude, longitude zero degrees,
Alone in the midst of immeasurable seas
The fame of the island has spread far and wide
It's in lists and on maps as a place bona fide.
As a consequence, many a credulous gull
Believes that there's really an Island of Null".*

Verse 2, "The Island of Null"

Ernest Davis, Professor of Computer Science,
New York University

<https://cs.nyu.edu/~davise/Verses/IslandOfNull.html>



Email Peter at peter.mooney@mu.ie
Email Levente at ljuhasz@fiu.edu